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WO 2001/045021 A2   WO 2000/060195 A1
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(54) Abstract Title
System and method for maintaining stock levels

(57) A system and method for maintaining stock levels of goods at first plurality of selling establishments supplied by a second plurality of supplying establishments are disclosed. The system comprises:

stock level monitoring means for determining the current stock levels at each of the selling establishments respectively;

transmission means for transmitting the current stock levels from each of the selling establishments respectively to a server 100 remote from the selling establishments and the supplying establishments;

processing means associated with the server for comparing the current stock levels with predetermined stocking levels; and

outputting means for transmitting restocking requirements from the server to the supplying establishments when the current stock levels are below the predetermined stocking levels.

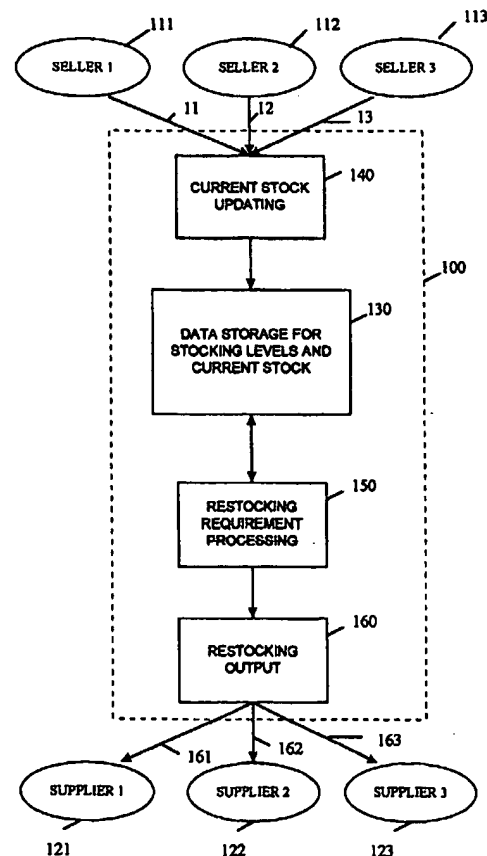The system may be adapted to operate over the internet where the server is an internet server.
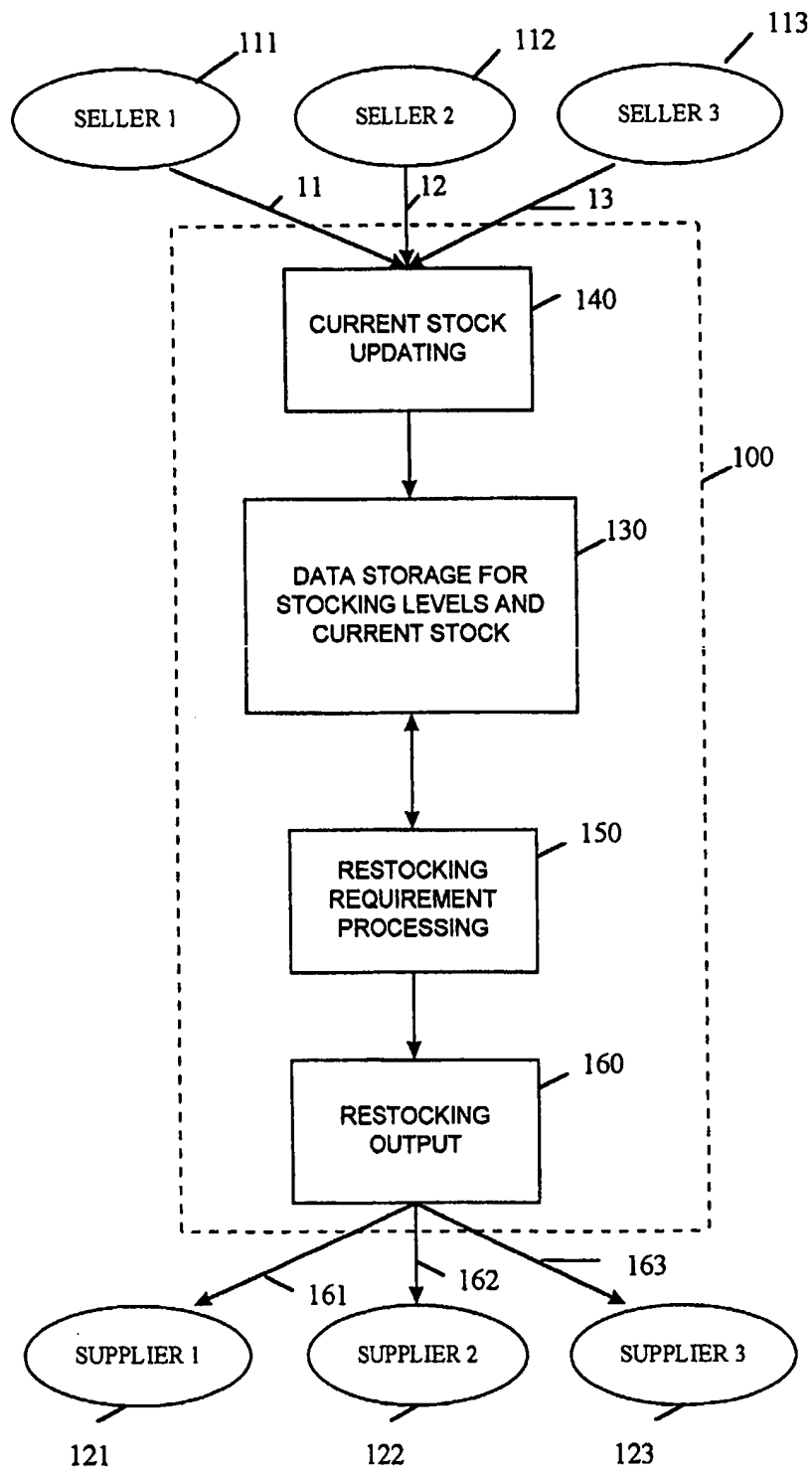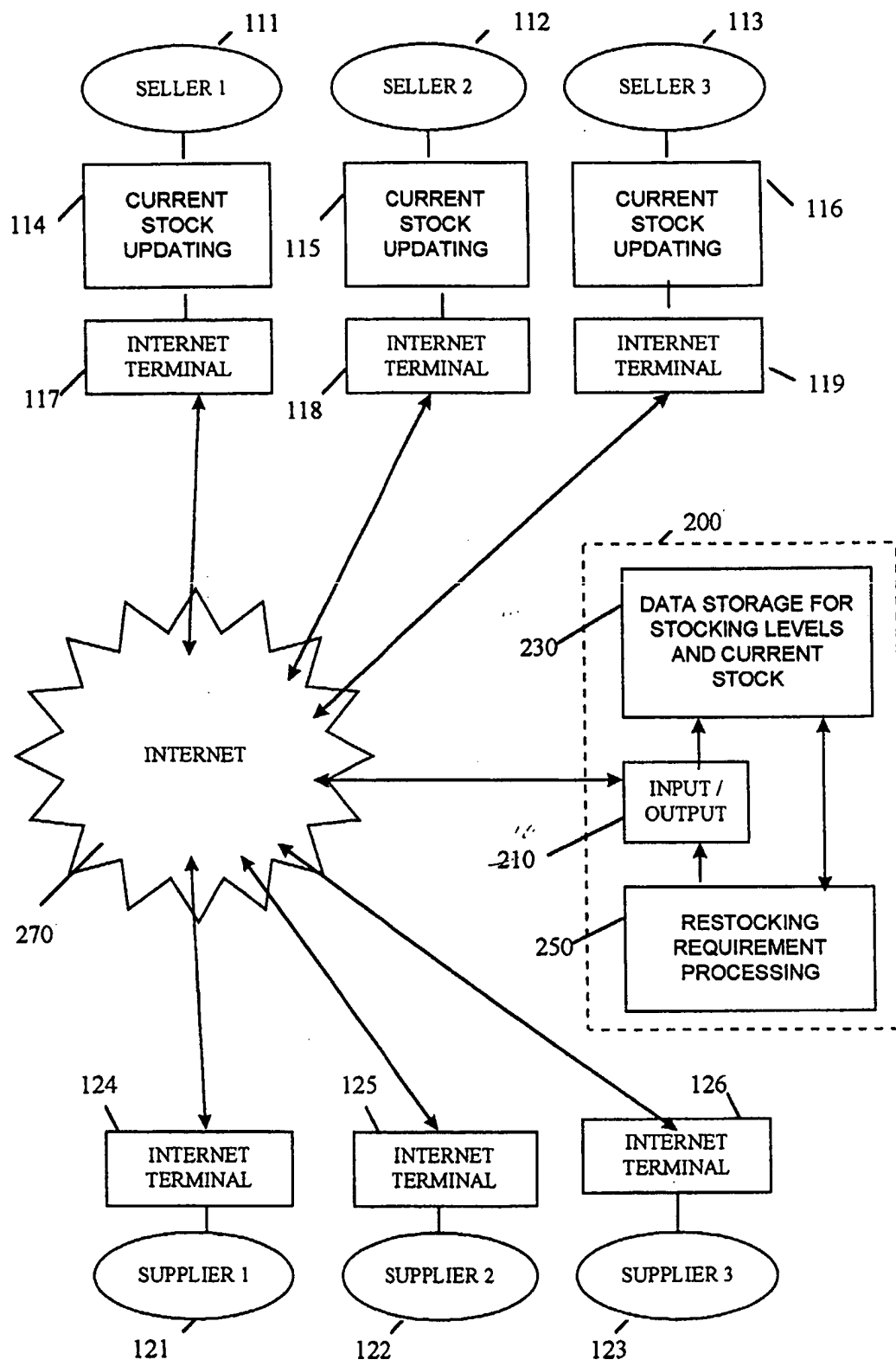
Figure 1

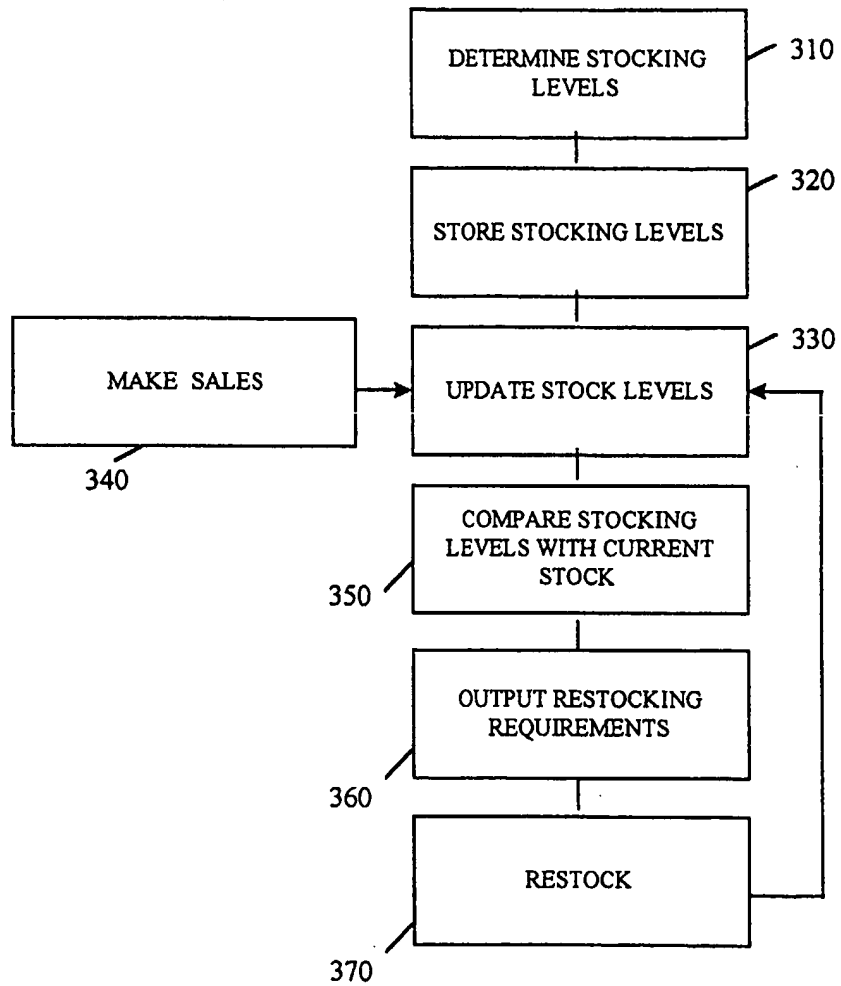GB 2 372 844 A

Figure 1

Figure 2

Figure 3

SYSTEM AND METHOD FOR MAINTAINING STOCK LEVELS

The present invention relates to a system and method for maintaining stock levels. The invention has particular application in the use of an internet web-site for maintaining stock levels of more than one retailer or other seller supplied by more than one supplier.

5   In known methods of stock control, retailers, for example, are responsible for keeping track of stock levels of all items which they stock and based on these stock levels generating and placing regular or irregular orders directly with each of their suppliers to maintain their stocks at acceptable levels. The majority of these orders will be repeat orders for stock items which they already carry. Some assistance may be supplied by the retailer's point of sale

10   system which may track and total all the sales of each stock item sold. Where the point of sale system can also be updated with new deliveries, then the point of sale system may also track the current levels of all stock items.

However, it is still necessary for repeat orders to be generated for each supplier. Moreover, the orders arrive at the suppliers in an unsystematic order so that, for example,

15   efficient routing of delivery vehicles is impeded.

The present invention seeks at least to ameliorate these difficulties.

According to a first aspect of the present invention there is provided a system for maintaining stock levels of goods at a first plurality of selling establishments supplied by a second plurality of supplying establishments comprising:

20   stock level monitoring means for determining the current stock levels at each of the selling establishments respectively;
           transmission means for transmitting the current stock levels from each of the selling establishments respectively to a server remote from the selling establishments and the supplying establishments;

25   processing means associated with the server for comparing the current stock levels with predetermined stocking levels; and
           outputting means for transmitting restocking requirements from the server to the supplying establishments when the current stock levels are below the predetermined stocking levels.

Preferably the stock level monitoring means comprises a component of a point of sale data capture means of each of the first plurality of selling establishments respectively for determining the number of sales of each item of stock over a predetermined period and means for calculating the current stock levels data using the determined number of sales.

5   Conveniently the stock level monitoring means comprises restocking tracking means for updating the current stock levels data when an item is restocked.

Conveniently updating means are provided on the server for editing the predetermined stocking levels.

Preferably the updating means includes means for updating the predetermined stocking

10   level data for an item based on sales demand for that item.

Conveniently the updating means includes means for varying the predetermined stocking levels data of an item based on known sales demand cycles.

Preferably the processing means for determining restocking requirements of selling establishments is adapted to determine the restocking requirements of sellers in a systematic

15   order.

Conveniently the systematic order is geographically based to maximise the efficiency of delivery routes.

Preferably the system is adapted to operate over the internet and the server is an internet server.

20   Advantageously the stock level monitoring means comprises pointers on computer equipment operated by the selling establishments respectively for pointing to the selling establishments' current stock levels data and the server includes interrogation means for establishing communications with the selling establishments' computer equipment and for using the pointers to locate and upload the current stock levels to the server.

25   Conveniently the output means comprise internet terminals accessible to each of the second plurality of suppliers respectively for accessing the internet server to output the restocking requirements specific to that supplier to each of the second plurality of suppliers respectively.

According to a second aspect of the invention there is provided a method of maintaining stock levels of each of a first plurality of selling establishments each supplied by at least one of a second plurality of supplying establishments comprising the steps of:

a) determining stocking levels of goods supplied by any of the second plurality of supplying establishments to each of the first plurality of selling establishments to provide predetermined stocking levels data;

b) storing the predetermined stocking levels data in data storage means associated with a server remote from the selling establishments and the supplying establishments;

c) determining the current stock levels of each the goods at each of the first plurality of selling establishments, respectively;

d) transmitting the current stock levels data from each of the first plurality of selling establishments to the server;

e) using processing means of the server to compare the current stock levels data with the stored predetermined stocking levels data for each of the first plurality of selling establishments; and

f) where the current stock levels are less than the predetermined stocking levels, generating and transmitting restocking requirements from the server to the respective supplying establishments.

Preferably the step of transmitting the current stock levels data is repeated at predetermined intervals.

Advantageously, the step of storing the predetermined stocking levels data comprises storing a permitted range of stocking levels and the step of comparing the current stock levels data with the stored predetermined stocking levels data comprises determining whether the current stock levels lie within the permitted range.

Conveniently the step of determining the current stock levels data includes using data generated by point of sale equipment operated by the first plurality of selling establishments respectively.

Conveniently the steps of using the server or transmitting data to or from the server comprise using or transmitting to or from an internet web-site server.

Conveniently the step of outputting restocking requirements is performed by each of the second plurality of supplying establishments logging into the web-site server and downloading requirements corresponding to the items which that supplying establishment is contracted to supply to the selling establishments.

According to a third aspect of the invention there is provided a computer program comprising code means for performing all the steps of the method described above when the program is run on one or more computers.

Advantageously, the computer program is embodied on a computer-readable medium.

According to a fourth aspect of the invention there is provided a computer program product comprising program code means stored in a computer-readable medium for performing the method described above when that program product is run on one or more computers.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 shows a schematic block diagram of the system of the present invention;

Figure 2 shows a schematic representation of an internet embodiment of the system of Figure 1; and

Figure 3 shows a flow diagram of the method of the present invention.

In the figures like parts are represented by like reference numerals.

Referring to Figure 1, there is illustrated an embodiment of the invention of a system for maintaining stock levels of three sellers, 111, 112 and 113 at different selling establishments who are each supplied by one or more of three suppliers 121, 122 and 123 at different supplying establishments. It will be understood that the invention is applicable to any

reasonable number of sellers and suppliers, limited only by the data storage capacity and processing power of the system, and that the embodiment discussed is for illustration only.

The system includes data storage media 130 for storing predetermined stocking levels data for each of the sellers 111, 112 and 113 for items supplied by one or more of the
5   suppliers 121, 122 and 123. Any known rewritable data storage medium may be used, such as, for example, magnetic disks. The data storage media 130 is also used to store current stock levels data corresponding to current stock levels held by each of the suppliers of each stock item for which they have stored corresponding predetermined stocking levels. The data corresponding to the current stock levels is transmitted over a first telecommunications
10   network 11,12,13 from each of the sellers to a remote central server 100 on which the data storage media 130 is located. The stored current stock levels is updated, in a means to be described, using an updating interface 140 on the server 100.

There is also provided on the server 100 a processing unit 150 for comparing the current stock levels data with the predetermined stocking levels data and generating a restocking
15   manifest for each of the suppliers 121, 122 and 123 when the current stock level is significantly less than the predetermined stocking levels. It will be appreciated that where, for example, a predetermined stocking level is say 1000 it may not be appropriate to re-order a single item when the current stock falls to 999 but only to re-order when the stock falls to say 900. For this reason, the predetermined stocking levels may, in fact, be defined as a range of
20   . numbers of items such that no order is placed while the current stock level is above the minimum value of the range but the item is restocked to at least the maximum value of the range.

There is also provided on the server 100 an output interface 160 between the processing unit 150 and the suppliers 121, 122 and 123 for outputting the manifests over a
25   telecommunication network 161, 162 and 163 from the central server to the respective suppliers.

Figure 2 illustrates a preferred internet embodiment of the invention. In this the data storage media 230 and the processing unit 250 form part of an internet web-site server 200. The storage media and processing unit are connected to an internet input/output interface 210
30   for communication of data over the internet 270.

In this embodiment the sellers 111, 112, 113 may each have some form of computerised stock tracking equipment 114, 115 and 116 for calculating their current stock levels. This stock tracking equipment may, for example, be associated with point of sale equipment. Each stock tracking equipment associated with a seller is connected to an internet terminal 117, 118 and 119 respectively. By logging onto the internet 270 using the internet terminal the suppliers can upload their current stock levels data to the web server 200 to update the current stock levels data stored on the storage media 230 of the server 200. Similarly, the suppliers or sellers can, by agreement, alter the predetermined stocking level values stored on the server 200. It will be understood that, alternatively, the sellers may update their current stock levels data manually by logging into the web-site and, for example, updating the data interactively.

In an analogous manner, the suppliers 121, 122 and 123 can access the internet 270 by internet terminals 124, 125 and 126 respectively in order to log into the web-site 200 to determine the restocking requirements of each of the sellers.

The method of the invention, which is illustrated in Figure 3, has a first step 310 of determining the predetermined stocking levels. These stocking levels are agreed between each of the suppliers and each of the sellers which they supply. Such an agreement may be made, for example, twice a year. The agreement may, for example, incorporate different stocking levels for different seasons of the year or other sales cycles dependent on past experience of the seller and the supplier of demand cycles for particular stock items or types of stock item. Once agreed, predetermined stocking levels data are, in the internet embodiment of Figure 2, stored on the web server 200 either by the supplier or the seller, step 320.

The seller also stores, step 330, on the internet server 200, current stock levels data of all the stock items for which predetermined stocking levels data have been entered for that the seller's selling establishment. As the seller subsequently sells, step 340, or otherwise disposes of, some, or all, of the items to reduce the current stock the current stock levels data is updated, step 330. Such updating may be carried out periodically from the seller's point of sale data and the data transmitted may consist of an item reference code for the relevant item sold, the start date of the period covered by the update, the end date of the period, the level of stock held at the end of the period and the sales made during the period. Alternatively, in order to carry out the updating, software and associated data may be loaded on a seller's computer to identify in which files the relevant current stock data is held and frequency parameters indicating with what predetermined frequency the current stock level data is to be

transmitted to the web-site server 200. Such data transmission may then be carried out automatically at the predetermined frequency.

In order to determine the replenishment of stock required, the current stock levels data is compared, step 350, with the predetermined stocking level data, or stocking level range. If the current stock level is below the predetermined stocking level, or below the minimum level of the stocking range, the quantity of stock required to replenish the stock to the stocking level, or the maximum of the stocking range, is calculated. This step may be carried out whenever the stocking level is updated, or at predetermined intervals, and in either case the replenishment level required may be stored until the server is interrogated by the corresponding supplier and the restocking requirements downloaded, step 360, to the corresponding supplier. Alternatively, the replenishment requirements may be transmitted, for example by email, to the corresponding supplier. As a further option, the replenishments levels may not be calculated until the database is interrogated by the corresponding supplier and then immediately be downloaded in a known manner to the supplier. Preferably, the data is downloaded to the supplier according to a systematic schedule which allows the supplier to optimise delivery routes, for example.

On receipt of the list of replenishment requirements, the supplier restocks, step 370, the supplier and either the supplier or the seller updates, step 330, the current stock levels data corresponding to the stock replenishment made.

Data stored on the web server may be protected by passwords, and where necessary by encryption, in any known manner, so that only data relevant to a given seller or supplier is available to that seller or supplier.

It will be understood that the supplier may be a manufacturer, a distributor, a buying group or a retail or franchise chain.

It will be further understood that the seller may be a branch of a retail or franchise group having a number of branches and additional facilities may allow the accumulation of data associated with a group of branch sellers so that group management can view the totality of sales and stocks across the branches of the group.

Although a preferred embodiment has been described which uses the internet, it will be understood that the invention may equally be used with other telecommunications networks.

Claims

1. A system for maintaining stock levels of goods at
first plurality of selling establishments supplied by a
second plurality of supplying establishments, the system
comprising:

stock level monitoring means for determining the
current stock levels at each of the selling
establishments respectively;

transmission means for transmitting the current
stock levels from each of the selling establishments
respectively to a server remote from the selling
establishments and the supplying establishments;

processing means associated with the server for
comparing the current stock levels with predetermined
stocking levels; and

outputting means for transmitting restocking
requirements from the server to the supplying
establishments when the current stock levels are below
the predetermined stocking levels.

2. A system as claimed in claim 1 wherein the stock
level monitoring means comprises a component of a point
of sale data capture means of each of the first plurality
of selling establishments respectively for determining
the number of sales of each item of stock over a
predetermined period and means for calculating the
current stock levels data using the determined number of
sales.

3. A system as claimed in claim 1 or claim 2 wherein
the stock level monitoring means comprises restocking

tracking means for updating the current stock levels data
when an item is restocked.

4.   A system as claimed in any of claims 1 to 3 wherein
updating means are provided on the server for editing the
predetermined stocking levels.

5.   A system as claimed in claim 4 wherein the updating
means includes means for updating the predetermined
stocking level data for an item based on sales demand for
that item.

6.   A system as claimed in claim 4 or claim 5 wherein
the updating means includes means for varying the
predetermined stocking levels data of an item based on
known sales demand cycles.

7.   A system as claimed in any of the preceding claims
wherein the processing means for determining restocking
requirements of selling establishments is adapted to
determine the restocking requirements of sellers in a
systematic order.

8.   A system as claimed in any of the preceding claims
wherein the systematic order is geographically based to
maximize the efficiency of delivery routes.

9.   A system as claimed in any of the preceding claims
wherein the system is adapted to operate over the
internet and the server is an internet server.

10. A system as claimed in any of the preceding claims
wherein the stock level monitoring means comprises
pointers on computer equipment operated by the selling
establishments respectively for pointing to the selling
5 establishments' current stock levels data and the server
includes interrogation means for establishing
communications with the selling establishments' computer
equipment and for using the pointers to locate and upload
the current stock levels to the server.
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11. A system as claimed in any of the preceding claims
wherein the output means comprise internet terminals
accessible to each of the second plurality of suppliers
respectively for accessing the internet server to output
15 the restocking requirements specific to that supplier to
each of the second plurality of suppliers respectively.

12. A method of maintaining stock levels of each of a
first plurality of selling establishments each supplied
20 by at least one of a second plurality of supplying
establishments comprises the steps of:

a)   determining stocking levels of goods supplied
by any of the second plurality of supplying
25 establishments to each of the first plurality of selling
establishments to provide predetermined stocking levels
data;

b)   storing the predetermined stocking levels data
30 in data storage means associated with a server remote
from the selling establishments and the supplying
establishments;

c)   determining the current stock levels of each
the goods at each of the first plurality of selling
establishments, respectively;

5

d)   transmitting the current stock levels data from
each of the first plurality of selling establishments to
the server;

10   e)   using processing means of the server to compare
the current stock levels data with the stored
predetermined stocking levels data for each of the first
plurality of selling establishments; and

15   f)   where the current stock levels are less than
the predetermined stocking levels, generating and
transmitting restocking requirements from the server to
the respective supplying establishments.

20   13.   A method as claimed in claim 12 wherein the step of
transmitting the current stock levels data is repeated at
predetermined intervals.

14.   A method as claimed in claim 12 or claim 13 wherein
25   the step of storing the predetermined stocking levels
data comprises storing a permitted range of stocking
levels and the step of comparing the current stock levels
data with the stored predetermined stocking levels data
comprises determining whether the current stock levels
30   lie within the permitted range.

15. A method as claimed in any of claims 12 to 14 wherein the step of determining the current stock levels data includes using data generated by a point of sale equipment operated by the first plurality of selling establishments respectively.

16. A method as claimed in any of claims 12 to 15 wherein the steps of using the server or transmitting data to or from the server comprise using or transmitting to or from an internet web-site server.

17. A method as claimed in any of claims 12 to 16 wherein the step of outputting restocking requirements is performed by each of the second plurality of supplying establishments logging into the web-site server and downloading requirements corresponding to the items which that supplying establishment is contracted to supply to the selling establishments.

18. A computer program comprises code means for performing all the steps of the method described above when the program is run on one or more computers.

19. A computer program as claimed in claim 18 wherein the computer program is embodied on a computer-readable medium.

20. A computer program product comprises program code means stored in a computer-readable medium for performing the method described above when that program product is run on one or more computers.

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Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): G4A (AUXF)

Int Cl (Ed.7): G06F

Other: Online: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
E,X	WO 01/45021A2	(DPMED.COM) See whole document	1,12 at least
X	WO 00/60195A1	(SUPPLYPRO) See p2 lines 20-25	1,12 at least
X	WO 00/29925A2	(BINTEL) See page 2 line 15 - page 3 line 5	1,12 at least

X	Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
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